

HEPTANE

HPT

CAUTIONARY RESPONSE INFORMATION

Common Synonyms n-Heptane		Watery liquid	Colorless	Gasoline-like odor
Floats on water. Flammable vapor is produced.				
<p>Evacuate. Keep people away. Avoid contact with liquid and vapor. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Notify local health and pollution control agencies. Protect water intakes.</p>				
Fire	<p>FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Extinguish with dry chemical, foam or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>			
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR Not irritating to eyes, nose or throat. If inhaled, will cause coughing or difficult breathing. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Irritating to skin and eyes. If swallowed, will cause nausea or vomiting. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.</p>			
Water Pollution	<p>Dangerous to aquatic life in high concentrations. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>			

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
 Contain
 Collection Systems: Skim
 Chemical and Physical Treatment: Burn
 Salvage waterfowl

2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** 31; Paraffin
 2.2 **Formula:** C₇H₁₆
 2.3 **IMO/UN Designation:** 3.2/1206
 2.4 **DOT ID No.:** 1206
 2.5 **CAS Registry No.:** 142-82-5
 2.6 **NAERG Guide No.:** 128
 2.7 **Standard Industrial Trade Classification:** 51114

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Safety glasses; gloves; similar to gasoline.
- 3.2 **Symptoms Following Exposure:** INHALATION: irritation of respiratory tract, coughing, depression, cardiac arrhythmias. ASPIRATION: severe lung irritation, pulmonary edema, mild excitement followed by depression. INGESTION: nausea, vomiting, swelling of abdomen, depression, headache.
- 3.3 **Treatment of Exposure:** INHALATION: maintain respiration; give oxygen if needed. ASPIRATION: enforce bed rest; administer oxygen. INGESTION: do NOT induce vomiting. SKIN OR EYES: remove contaminated clothing, wipe and wash skin area with soap and water; wash eyes with plenty of water.
- 3.4 **TLV-TWA:** 400 ppm
 3.5 **TLV-STEL:** Not listed.
 3.6 **TLV-Ceiling:** 500 ppm.
 3.7 **Toxicity by Ingestion:** Grade 0; LD₅₀ above 15 g/kg
 3.8 **Toxicity by Inhalation:** Currently not available.
 3.9 **Chronic Toxicity:** None
 3.10 **Vapor (Gas) Irritant Characteristics:** Vapors are nonirritating to the eyes and throat.
 3.11 **Liquid or Solid Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
 3.12 **Odor Threshold:** 220 ppm
 3.13 **IDLH Value:** 750 ppm
 3.14 **OSHA PEL-TWA:** 500 ppm
 3.15 **OSHA PEL-STEL:** Not listed.
 3.16 **OSHA PEL-Ceiling:** Not listed.
 3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:** 25°F C.C.
 4.2 **Flammable Limits in Air:** 1.0%-7.0%
 4.3 **Fire Extinguishing Agents:** Foam, dry chemical, carbon dioxide
 4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
 4.5 **Special Hazards of Combustion Products:** Not pertinent
 4.6 **Behavior in Fire:** Not pertinent
 4.7 **Auto Ignition Temperature:** 433°F
 4.8 **Electrical Hazards:** Class I, group D
 4.9 **Burning Rate:** 6.8 mm/min.
 4.10 **Adiabatic Flame Temperature:** Currently not available
 4.11 **Stoichiometric Air to Fuel Ratio:** 52.4 (calc.)
 4.12 **Flame Temperature:** Currently not available
 4.13 **Combustion Molar Ratio (Reactant to Product):** 15.0 (calc.)
 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** N₂diluent: 11.5-11.6%; CO₂ diluent: 14.5%

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
 5.2 **Reactivity with Common Materials:** No reaction
 5.3 **Stability During Transport:** Stable
 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
 5.5 **Polymerization:** Not pertinent
 5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**
 4924 ppm/24 hr/mosquito fish/TL_w/fresh water
 6.2 **Waterfowl Toxicity:** Currently not available
 6.3 **Biological Oxygen Demand (BOD):** 0% (theor.), 7 days
 6.4 **Food Chain Concentration Potential:** None
 6.5 **GESAMP Hazard Profile:**
 Bioaccumulation: 0
 Damage to living resources: 3
 Human Oral hazard: 0
 Human Contact hazard: 0
 Reduction of amenities: 0

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Various grades, all greater than 99%
 7.2 **Storage Temperature:** Ambient
 7.3 **Inert Atmosphere:** No requirement
 7.4 **Venting:** Open (flame arrester) or pressure-vacuum
 7.5 **IMO Pollution Category:** (C)
 7.6 **Ship Type:** 3
 7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid
 8.2 **49 CFR Class:** 3
 8.3 **49 CFR Package Group:** II
 8.4 **Marine Pollutant:** No
 8.5 **NFPA Hazard Classification:**
- | Hazard | Classification |
|----------------------|----------------|
| Health Hazard (Blue) | 1 |
| Flammability (Red) | 3 |
| Instability (Yellow) | 0 |
- 8.6 **EPA Reportable Quantity:** Not listed.
 8.7 **EPA Pollution Category:** Not listed.
 8.8 **RCRA Waste Number:** Not listed
 8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
 9.2 **Molecular Weight:** 100.21
 9.3 **Boiling Point at 1 atm:** 209.1°F = 98.4°C = 371.6°K
 9.4 **Freezing Point:** -131°F = -90.6°C = 182.6°K
 9.5 **Critical Temperature:** 512.6°F = 267°C = 540.2°K
 9.6 **Critical Pressure:** 400 psia = 27 atm = 2.7 MN/m²
 9.7 **Specific Gravity:** 0.6838 at 20°C (liquid)
 9.8 **Liquid Surface Tension:** 19.3 dynes/cm = 0.0193 N/m at 20°C
 9.9 **Liquid Water Interfacial Tension:** 51 dynes/cm = 0.051 N/m at 20°C
 9.10 **Vapor (Gas) Specific Gravity:** Currently not available
 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.054
 9.12 **Latent Heat of Vaporization:** 136.1 Btu/lb = 75.61 cal/g = 3.166 X 10⁵ J/kg
 9.13 **Heat of Combustion:** -19,170 Btu/lb = -10,650 cal/g = -445.9 X 10⁵ J/kg
 9.14 **Heat of Decomposition:** Not pertinent
 9.15 **Heat of Solution:** Not pertinent
 9.16 **Heat of Polymerization:** Not pertinent
 9.17 **Heat of Fusion:** 33.78 cal/g
 9.18 **Limiting Value:** Currently not available
 9.19 **Reid Vapor Pressure:** 1.8 psia

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
35	43.730	0	0.498	-90	1.149	35	0.519
40	43.570	5	0.500	-80	1.138	40	0.502
45	43.410	10	0.502	-70	1.127	45	0.485
50	43.260	15	0.504	-60	1.115	50	0.469
55	43.100	20	0.507	-50	1.104	55	0.454
60	42.950	25	0.509	-40	1.092	60	0.440
65	42.790	30	0.511	-30	1.081	65	0.427
70	42.630	35	0.513	-20	1.069	70	0.414
75	42.480	40	0.515	-10	1.058	75	0.402
80	42.320	45	0.518	0	1.046	80	0.390
85	42.170	50	0.520	10	1.035	85	0.379
90	42.010	55	0.522	20	1.024	90	0.368
95	41.850	60	0.524	30	1.012	95	0.358
100	41.700	65	0.527	40	1.001	100	0.348
105	41.540	70	0.529	50	0.989	105	0.339
110	41.390	75	0.531	60	0.978	110	0.330
115	41.230	80	0.533	70	0.966	115	0.322
120	41.070	85	0.535	80	0.955	120	0.314
125	40.920	90	0.538	90	0.943	125	0.306
130	40.760	95	0.540	100	0.932	130	0.299
135	40.610	100	0.542	110	0.921	135	0.291
140	40.450	105	0.544	120	0.909	140	0.285
145	40.290	110	0.547	130	0.898	145	0.278
150	40.140	115	0.549	140	0.886	150	0.272
155	39.980	120	0.551	150	0.875	155	0.266
160	39.830	125	0.553	160	0.863	160	0.260

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	I	0	0.066	0	0.00134	0	0.345
	N	10	0.098	10	0.00195	25	0.362
	S	20	0.143	20	0.00279	50	0.378
	O	30	0.205	30	0.00391	75	0.394
	L	40	0.288	40	0.00538	100	0.410
	U	50	0.398	50	0.00729	125	0.426
	B	60	0.541	60	0.00972	150	0.442
	L	70	0.725	70	0.01279	175	0.457
	E	80	0.960	80	0.01660	200	0.472
		90	1.254	90	0.02129	225	0.487
		100	1.619	100	0.02701	250	0.501
		110	2.068	110	0.03389	275	0.516
		120	2.615	120	0.04211	300	0.530
		130	3.275	130	0.05184	325	0.544
		140	4.064	140	0.06326	350	0.557
		150	5.000	150	0.07657	375	0.570
		160	6.104	160	0.09196	400	0.584
		170	7.395	170	0.10960	425	0.596
		180	8.896	180	0.12980	450	0.609
		190	10.630	190	0.15270	475	0.621
		200	12.620	200	0.17860	500	0.633
		210	14.890	210	0.20760	525	0.645
		220	17.470	220	0.24000	550	0.657
		230	20.390	230	0.27600	575	0.668
		240	23.670	240	0.31590	600	0.679
		250	27.350	250	0.35980		